

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-305268

(43)Date of publication of application : 28.11.1997

(51)Int.Cl.

G06F 1/20

G06F 1/04

G06F 1/08

(21)Application number : 08-146682

(71)Applicant : HITACHI LTD

(22)Date of filing : 16.05.1996

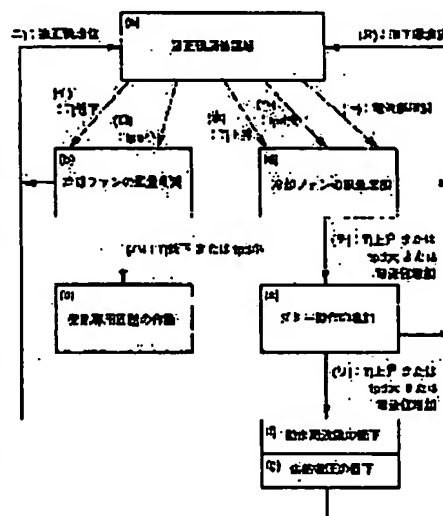
(72)Inventor : ISOBE TADAAKI

(54) INFORMATION PROCESSING SYSTEM CAPABLE OF CONTROLLING POWER CONSUMPTION AND COOLING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To conduct system operation with optimum power consumption by deriving maximum performance from the information processing system in proper environment.

SOLUTION: The system operating in proper environment (a) detects a decrease (h) or small tpd (i), the system operates while the cooling fan is reduced (b) in air capacity and if no improvement is obtained, a heat generating dedicated circuit is placed in operation (c) to put the system back to proper environment value (j). When a T_j rise (k), large tpd (l), or an increase (m) in supply current quantity is detected, the air capacity of the cooling fan is increased (d) and if improvement is still not obtained either (n), dummy operation (e) is interposed to make the operation of the system slow. According to circumstances (o), at least one of a decrease in operating frequency (f) and a decrease in supply voltage (g) is made and when a proper (p) is obtained, the system is placed in the operation (a) in a normal state.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] In an information processor equipped with two or more integrated circuits, the power unit which supplies power to an integrated-circuit group, and the cooling system which cools an integrated-circuit group A chip thermometry means to measure the chip temperature T_j of an integrated circuit and to output to said information processor is established. Said information processor Information processing system which controls the power consumption and the cooling system which are characterized by adjusting said chip temperature T_j by weakening cooling power of said cooling system when the chip temperature T_j falls from a proper value, and strengthening cooling power of said cooling system when the chip temperature T_j rises from a proper value.

[Claim 2] In the information processing system which controls power consumption and a cooling system according to claim 1, an exoergic specialized circuit and a dummy actuation control circuit are prepared. Said information processor When a fall [value / of said chip temperature T_j / proper] cannot be adjusted, an exoergic specialized circuit is started. Information processing system which controls the power consumption and the cooling system which are characterized by adjusting said chip temperature T_j by starting said dummy actuation control circuit when a rise [value / of said chip temperature T_j / proper] cannot be adjusted.

[Claim 3] In the information processing system which controls power consumption and a cooling system according to claim 1 or 2, a clock speed control circuit and an armature-voltage control circuit are prepared. Said information processor When a rise [value / of said chip temperature T_j / proper] cannot be adjusted, at least one of said clock speed control circuits and armature-voltage control circuits is controlled. Information processing system which controls the power consumption and the cooling system which are characterized by adjusting said chip temperature T_j by performing the fall of clock frequency, and/or the fall of supply voltage.

[Claim 4] In an information processor equipped with two or more integrated circuits, the power unit which supplies power to an integrated-circuit group, and the cooling system which cools an integrated-circuit group The time delay measuring circuit which supervises / measures the time delay t_{pd} of the circuit in said information processor is prepared. Said information processor Information processing system which controls the power consumption and the cooling system which are characterized by adjusting said time delay t_{pd} by weakening cooling power of said cooling system when a time delay t_{pd} decreases from a proper value, and strengthening cooling power of said cooling system when a time delay t_{pd} increases from a proper value.

[Claim 5] It is the information processing system which controls the power consumption and the cooling system which are characterized by to adjust said time delay t_{pd} by starting an exoergic specialized circuit in the information processing system which controls power consumption and a cooling system according to claim 4, when an exoergic specialized circuit and a dummy actuation control circuit are prepared and said information processor cannot adjust reduction [value / of said time delay t_{pd} / proper], and starting said dummy actuation control circuit, when increase [value / of said time delay t_{pd} / proper] cannot be adjusted.

[Claim 6] It is the information processing system which a clock speed control circuit and an armature-voltage control circuit are prepared, said information processor controls at least one of said clock speed control circuits and armature-voltage control circuits in the information processing system which controls power consumption and a cooling system according to claim 4 or 5 when reduction of said time delay t_{pd} cannot be adjusted, and controls the power consumption and the cooling system which are characterized by adjusting said time delay t_{pd} by performing the fall of clock frequency, and/or the fall of supply voltage.

[Claim 7] In an information processor equipped with two or more integrated circuits, the power unit which supplies power to an integrated-circuit group, and the cooling system which cools an integrated-circuit group The amount control mechanism of jobs which manages the amount of jobs supplied, a clock speed control circuit, and an armature-voltage control circuit are prepared. Said information processor When the amount of jobs managed by said amount

control mechanism of jobs decreases from a proper amount, When at least one of said clock speed control circuit, an armature-voltage control circuit, and cooling systems is controlled, at least one of the fall of clock frequency, the fall of supply voltage, and the falls of cooling power is performed and the amount of jobs increases from a proper amount,